

LA-UR- 01-6068

Approved for public release;  
distribution is unlimited.

*Title:* IMPACTS OF THE CERRO GRANDE FIRE ON  
HOMESTEAD ERA AND MANHATTAN PROJECT  
PROPERTIES AT LOS ALAMOS NATIONAL  
LABORATORY

*Author(s):* Ellen D. McGehee  
John Isaacson

*Submitted to:* Conference on Wildfires and Cultural Resources  
10 November 2001  
Santa Fe, NM



## Los Alamos

NATIONAL LABORATORY

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the U.S. Department of Energy under contract W-7405-ENG-36. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

***Impacts of the Cerro Grande Fire on  
Homestead Era and Manhattan Project Properties at  
Los Alamos National Laboratory***

Paper presented at November 10, 2001 Conference on Wildfires and Cultural Resources,  
Santa Fe, New Mexico.

Conference sponsored by New Mexico Archeological Council, Santa Fe National Forest,  
Department of Energy – Los Alamos Area Office, and Bandelier National Monument.

Ellen McGehee and John Isaacson

ESH-20, The Ecology Group

Los Alamos National Laboratory

In May of 2000, the Cerro Grande Fire burned approximately 8,000 acres of Department of Energy (DOE) managed land at the Los Alamos National Laboratory (LANL).

Although the fire was generally of low intensity, it impacted a significant number of LANL's cultural resources. Historic wooden properties were affected more heavily than prehistoric archaeological sites. This paper will provide an overview of the Homestead and Manhattan Project Periods at LANL and will discuss the effects of the Cerro Grande Fire on historic wooden properties. Post-fire cultural resource management issues will also be discussed.

### **Homestead Period (1890–1942)**

Formal homesteading on the Pajarito Plateau began in the 1890s. Many of the original patent holders were Hispanic Americans who had permanent homes in the Rio Grande valley. Homestead families used the plateau for seasonal farming, ranching, and resource gathering. Notable exceptions to this pattern included the establishment of a few permanent Anglo ranches such as the Los Alamos Ranch School, located in the area of present-day downtown Los Alamos, and Anchor Ranch, located on LANL land. The Los Alamos Ranch School was in operation from 1918 until the end of the Homestead Period in 1942, a date that coincides with the U.S. Government's acquisition of lands on the Pajarito Plateau for the creation of a secret wartime laboratory.

Patented homestead sites located at LANL are complex sites exhibiting a variety of historic features. These features include the remains of wooden buildings and structures such as cabins, sheds, corrals, animal pens, privies, and fence lines. Historic artifact

scatters, subsurface features, and a diversity of rock features are also commonly found on LANL land.



Figure 1. LA 21334, the Montoya Homestead on Two-Mile Mesa (pre-fire).

### **Manhattan Project (1943–1946)**

The scientific laboratory at Los Alamos was the location of secret research and design efforts for the development of the first atomic weapons. This secret undertaking was known as Project Y of the Manhattan Project. Although the fission bomb was conceptually attainable, many difficulties still stood in the way of producing a usable weapon. Two bomb designs appeared to be the most promising: a uranium "gun" device and a plutonium "implosion" device.

Hundreds of LANL properties were constructed during the war years (1943–1945). Yet, as of May 2000, only 65 buildings and structures remained. Manhattan Project properties range from modest temporary wooden buildings of World War II mobilization design to more substantial concrete structures. Many of the properties originally housed administrative or support activities and are of minor significance to the history of the Manhattan Project; however, a few of the remaining buildings played key roles in the development of the first atomic weapons and are highly significant properties. Of these, the cluster of buildings known as V-Site was among the most significant.

#### *V-Site*

Of the two approaches to bomb design, the implosion method was extremely difficult to perfect. However, by the fall of 1944, there was enough confidence in the success of the implosion weapon to begin selection of a site where a test device, later known as the Trinity device, could be assembled. In 1944, a small portion of the S-Site high explosives area was set aside for the development of V-Site. The wooden buildings and structures eventually constructed at V-Site were used to test assemble the Trinity device before its shipment to the Trinity Site in southern New Mexico. V-Site was one of the most secret facilities at the early laboratory—no pictures of World War II era activities at V-Site could be located in LANL’s extensive photographic archives.

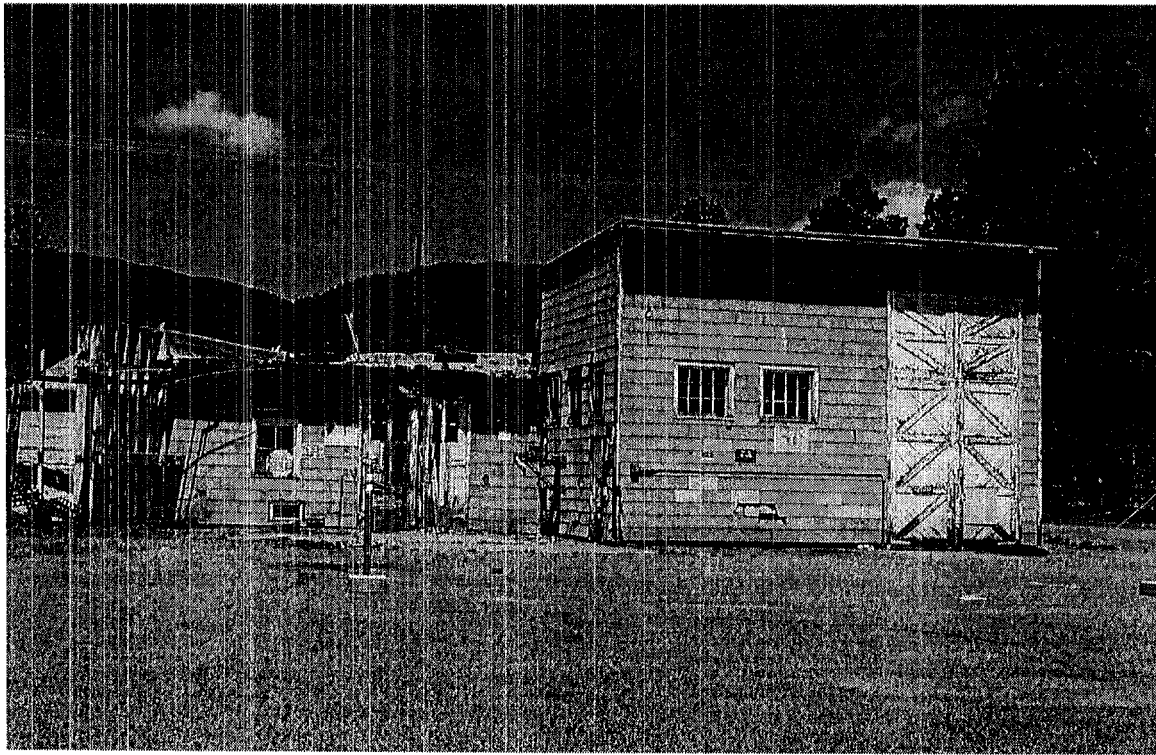


Figure 2. V-Site, Buildings TA-16-515 (right) and TA-16-517 (left).

### **Initial Fire Effects**

During the period of May 11 through May 12, the Cerro Grande Fire consumed 2,400 acres of LANL land. The fire crossed into the Laboratory via Water Canyon, immediately impacting the Grant and Garcia Homestead site on the east side of West Jemez Road. It crossed through LANL's high explosives area, home of historic V-Site, burned across the Laboratory to Technical Area 6, the location of the Montoya Homestead, and into the Pajarito Road corridor, the location of the Romero and McDougall Homesteads. Many of the affected Homestead and Manhattan Project properties were located in low- and moderate-burn severity areas. Unfortunately,

because of the dry and well-aged nature of the wood found at these sites, many of the structures and buildings were almost entirely consumed by fire. Most of the later Cold War architecture at LANL is built using poured concrete or concrete masonry units. For the most part, the fire did not affect this style of construction.

### **Fire Effects to Homestead Period Properties**

Ten LANL homestead sites are located within the burn perimeter of the Cerro Grande Fire. These sites represent 66 percent of the identified patented homesteads at LANL. The ten homesteads had a variety of features, both wooden and non-wooden, and still have data potential in the form of subsurface features and unanalyzed artifact scatters. Unfortunately, however, all significant structures or buildings associated with Hispanic Homesteading at LANL were lost. Major Homestead Period losses include the cabin and shed from the Montoya Homestead on Two-Mile Mesa, the standing privy and other wooden features from the Grant and Garcia Homestead in Water Canyon, and the Upper Pajarito Canyon Bridge. There are additional Homestead Period sites located within the burned area perimeter. These sites include isolated trash scatters and animal pens, wagon road segments, drainage-control and water-retention features, and temporary shelters.



Figure 3. LA 21334, the Montoya Cabin on Two-Mile Mesa.



Figure 4. The Montoya Cabin (post-fire).



## **Fire Effects to Manhattan Project and Early Cold War Properties**

Manhattan Project properties were also lost on May 11, 2000. When the Cerro Grande Fire burned across LANL's high explosives testing area, four of six properties at V-Site were destroyed. Luckily, Building TA-16-516, the Trinity device assembly building, remained untouched.

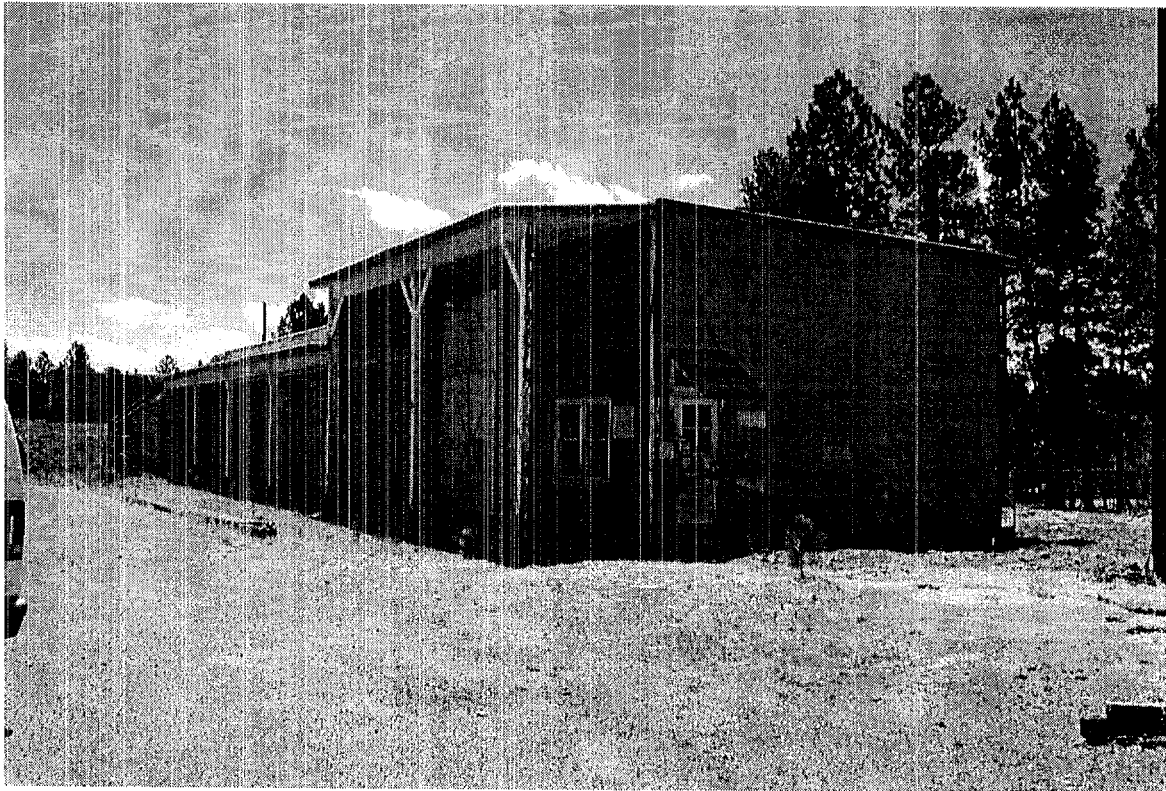


Figure 5. TA-16-515 at V-Site (pre-fire).

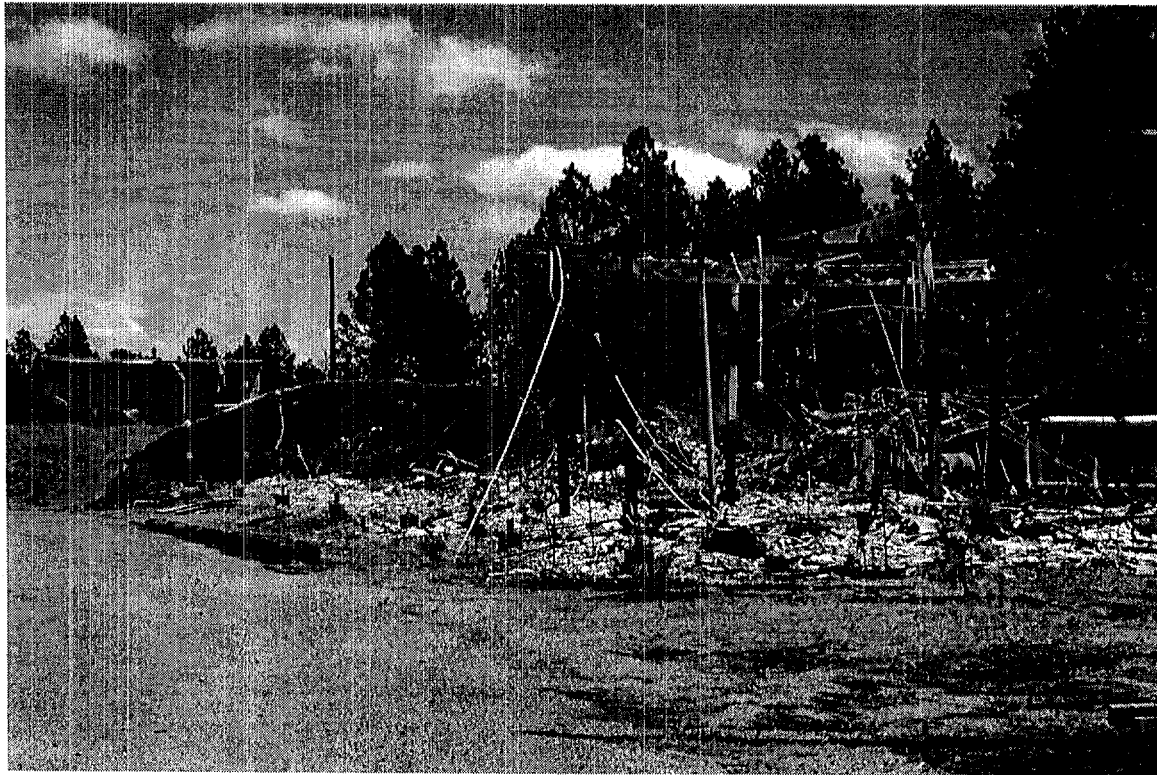


Figure 6. TA-16-515 (post-fire).

Before the fire, an open wooden shed at V-Site was being used to house historic casting equipment salvaged from another Manhattan Project building. The shed and all combustible artifacts were burned. Other metal and glass artifacts were either melted or severely damaged by the effects of the fire.

Two historic storage buildings built in 1945 were completely consumed by fire, and a small complex of buildings known as “The Hollow” was partially burned. Two wooden cooling towers were burned, one dating to 1947, the first year of the Early Cold War Period at Los Alamos. Several Manhattan Project experimental areas with wooden elements were burned, and two historic wooden bomb covers on Two-Mile Mesa were almost completely destroyed by the fire.

## Post-Fire Flooding

On June 28, 2000, an intense rainstorm caused significant flooding along West Jemez Road. This flooding event damaged the roadway in Water Canyon and destroyed the Anchor Ranch Ice House. Additionally, the elevated risk of flooding in Los Alamos Canyon necessitated the emergency removal of a small building at the historic Omega West Reactor facility. This building, although used primarily as a guard station, was also once used to store radioactive material associated with the Omega West Research Reactor.

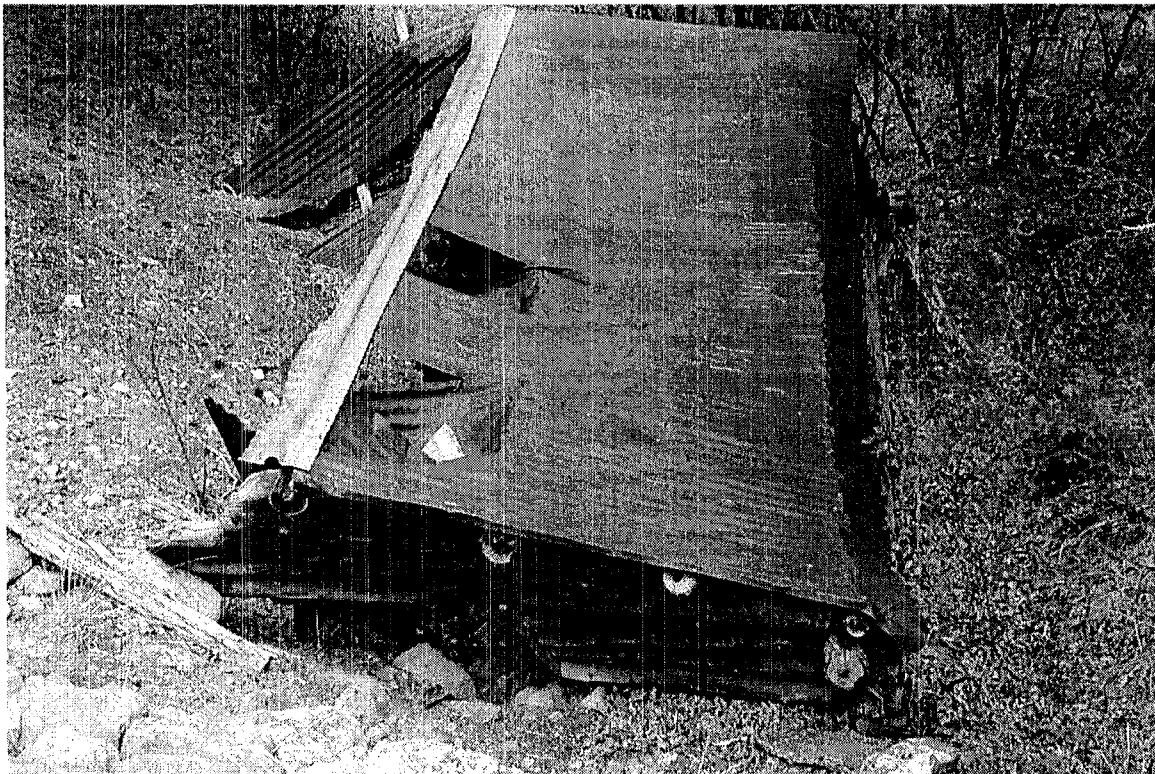


Figure 7. The “Ice House” at Anchor Ranch (pre-flood).



Figure 8. The “Ice House” (post-flood).

## **Post-Fire Cultural Resource Management Issues**

### *Initial Field Assessment and Mitigation*

Field assessments were initially conducted to determine the degree of damage from the Cerro Grande Fire. Flood, tree-fall, and erosional risks were also assessed. Tree-ring samples were taken from burned or flooded sites, and initial assessments of impacts to artifact scatters were carried out. Fire effects to non-combustible Homestead Period artifacts were easily identified. These effects included evidence of spalling on ceramic surfaces and an increase in friability and surface degradation on metal objects.

Additionally, many glass items have cracked or shattered since the fire, and plastic and rubber artifacts, if not melted, have become more brittle. At V-Site, the surfaces of the

kettles used to process high explosives are now significantly rusted. The intense heat of the fire at V-Site was clearly demonstrated by the numerous metal items that had melted.

### *Long-Term Management and Preservation*

The Cerro Grande Fire has made it obvious that long-term management of historic wooden properties will be an important part of LANL's cultural resource management responsibilities. One of the first steps to be taken will be the development of historical contexts for both the Homestead and Manhattan Project Periods at LANL. These contexts will be developed using a compilation of pre-fire documentation from a variety of sources—from existing site forms to Homestead Patent papers, historic photographs, and interviews. Using the information presented in the context documents, the most significant properties from these historic periods will be selected for stabilization and preservation.

### *V-Site and other Manhattan Project Properties*

In 1998, V-Site was designated an official project of the White House Millennium, Save America's Treasures grant program. The DOE received a grant to restore the buildings for the development of a Manhattan Project interpretative center. The grant required private matching funds to be raised, and the DOE entered into a cooperative agreement with the National Trust for Historic Preservation to assist in raising the necessary private funds. The Cerro Grande Fire necessitated a reevaluation of the original preservation project centered around the buildings at V-Site. After the fire, the DOE consulted with the Advisory Council and the State Historic Preservation Officer. A main discussion

topic was that the fire's impacts were now part of the history of V-Site and that this would have to be acknowledged in some way.

A decision was ultimately made to leave the ruins of Building TA-16-515 in a post-fire state and to rebuild the original courtyard area around Building TA-16-516, the intact assembly building. To date, the remains of Building TA-16-515 have been decontaminated of asbestos-containing material, and a large crane, associated earthen berms, and the foundation have been left in place.

The DOE has also decided to identify an alternate Manhattan Project property for the development of the Manhattan Project interpretive center. One possible candidate is the "periscope bunker," a cement bunker built into the side of a small hill near the historic Anchor Ranch site. This building was used for ballistics experiments in the design of Little Boy, the uranium gun device. The building was originally equipped with a tall periscope that allowed researchers to observe ballistics tests from the safety of the bunker.

## **Summary**

The fragility of historic wooden properties was made quite apparent by the devastating effects of the Cerro Grande Fire. In the aftermath of this fire, LANL is continuing its program of documenting and managing historic properties—new in-field mitigation measures will be developed, archival documentation will be compiled, and detailed historical contexts will be written. In response to this tremendous historical loss, LANL

is also in the process of identifying its most significant remaining historic properties for future preservation initiatives.